pickoff means coupled signalwise to said flow tube apparatus for generating signals representing induced Coriolis deflections of said vibrating process material filled flow tube apparatus; and

meter electronics that receives said signals from said pickoff means and generates output information pertaining to said process material flow.

Preferably said flow tube apparatus defines a substantially straight single flow tube.

Preferably the entirety of the wetted flow path of said Coriolis flowmeter comprises a PFA substance.

Preferably said flow tube apparatus defines more than one flow tube.

Preferably said pickoff means is an electro-magnetic device having a magnet connected to said flow tube apparatus and further having a coil.

Preferably said pickoff means comprises a light source and an optical detector;

said vibrating flow tube apparatus is positioned between said light source and said optical detector to alter the characteristics of the light received by said optical detector from said light source;

said optical detector is responsive to said alteration to generate said signals representing said Coriolis deflections.

Preferably said base has a lower surface and an inner pair of upwardly extending side walls as well as an outer pair of upwardly ending walls;

openings in each of said upwardly extending walls are coaxially aligned to receive said flow tube apparatus.

Preferably said base is substantially u-shaped and has a lower surface and a pair of upwardly extending walls proximate sides of said base;

openings in each of said upwardly extending walls are coaxially aligned to receive said flow tube apparatus.

Preferably ends of said flow tube apparatus extend beyond said walls.

Preferably said base is a solid rectangular element defining a parallelepiped;

said flow tube apparatus is connected to posts affixed between said walls to a top surface of said base.

Preferably an inlet of said flow tube apparatus receives said process material flow from a supply tube;

an outlet of said flow tube apparatus is coupled to an inlet of a return tube;

said return tube is coupled to said base and is positioned parallel to said flow tube apparatus and extends through walls of said base, and

said return tube is adapted to be connected to an exit tube to extend said process material flow towards a user application.

Preferably said flow tube apparatus comprises a single flow tube and that said base has a mass substantially greater than the mass of said flow tube with process material.

Preferably the mass of said base is at least 1000 times the mass of said single flow tube with process material.

Preferably the mass of said base is at least 100 times the mass of said single flow tube with process material.

Preferably said driver is affixed to the top of said single flow tube when in use.

Preferably a dynamic balancer means coupled to said base proximate said nodes to maintain said nodes at a reduced level of vibration.

Preferably said dynamic balancer means is an active dynamic balancer controlled by the exchange of signals with said meter electronics.

Preferably said base is substantially u-shaped and has a lower surface and a pair of upwardly extending side walls containing coaxially aligned openings for receiving said single flow tube.

Preferably said single flow tube extends through coaxial openings in said walls.

Preferably said flow tube apparatus comprises a first and a second flow tube coupled to said base and positioned parallel to each other, said first and second flow tubes are adapted to be vibrated in phase opposition by said driver.

Preferably said driver is affixed to both said first flow tube and said second flow tube and is adapted to vibrate said first and second flow tubes in phase opposition;

said pickoffs being affixed to both said first and second flow tubes to detect the Coriolis deflections of said first and second flow tubes.

Preferably said first and second flow tubes are connected in series with respect to said material flow.

Preferably said first and second flow tubes are connected in parallel with respect to said material flow.

Preferably a return tube coupled to said base and oriented parallel to said first and second flow tubes;

said return tube receives said process material flow from said first and second flow tubes and extends said material flow towards a user application.

Preferably said base is u-shaped and has upwardly extending walls;

said first and second flow tubes extend through said walls of said base and have inlet and outlet ends projecting beyond the outer surfaces of said walls.

Another aspect comprises a Coriolis flowmeter for measuring a flow of process material having an ultra high level of purity;

said Coriolis flowmeter comprising:

a single flow tube formed of a material, such as PFA, that does not transfer ions from said single flow tube to said process material;

said single flow tube has high flexibility and further has a stiffness substantially lower than a metal or glass flow tube;

the entirety of the wetted path of said Coriolis flowmeter comprises said PFA material;

a driver affixed to said single flow tube for vibrating said single flow tube containing said process material flow;

A1 cont'd

a massive base affixed to ends of said single flow tube to absorb undesired vibratory forces generated by said vibrating flow tube;

said base defines stationary nodes at ends of said flow tube;

an inlet connector connected to said massive base and adapted to receive a flow of said process material from a supply tube;

an inlet end of said single flow tube is affixed to said inlet connector;

said input connector sealably connects said inlet end of said single flow tube to an outlet end of said supply tube to effect the extension of said process material flow in said supply tube to said single flow tube;

said inlet connector maintains said inlet end of said flow tube fixed with respect to said massive base;

an outlet end of said single flow tube affixed to a second connector for extending said process material flow via an exit tube towards a user destination;

a pair of pickoffs coupled to said single flow tube on opposite sides of said driver for generating signals representing Coriolis induced deflections of said vibrating material filled single flow tube;

meter electronics; and

conductors extending signals from said pickoffs to said meter electronics;

said meter electronics receives said pickoff output signals and generates output information pertaining to said process material flow.

Preferably a return tube connected to said massive base parallel to said single flow tube;

end portions of said single flow tube and said return tube are glued to said massive base to maintain said single flow tube and said return tube immovable with respect to said massive base;

an inlet of said return tube;

an intermediate tube connecting said outlet end of said single flow tube and said inlet end of said return tube via said second connector to extend said process material flow from said outlet end of said single flow tube to said return tube;

an outlet connector connected to said massive base for receiving said flow of said process material from said outlet end of said return tube;

said outlet connector sealably connects said outlet end of said return tube to an inlet end of an exit tube to effect the extension of said process material flow in said return tube to said exit tube ;

said exit tube is adapted to extend said process material flow to a user destination.

Preferably said pickoffs are electro-magnetic devices each having a magnet and a coil.

Preferably said pickoffs each comprises a light source and an optical detector with the magnitude of the Coriolis deflection of said single flow tube defining the magnitude of the output current of said optical detector.

Preferably said massive base has a pair of upwardly extending parallel side walls having coaxial openings through which said single flow tube and said return tube extend.

Preferably said massive base is substantially u-shaped.

Preferably said massive base is a solid rectangular element defining a parallelepiped;

said single flow tube is mounted to upwardly extending posts affixed to a surface of said massive base.

Preferably ends of said single flow tube and said return tube extend beyond the outer surface of each leg.

Preferably said single flow tube is substantially straight.

Preferably Coriolis flowmeter comprises a second flow tube coupled to said massive base to define a dynamically balanced structure when vibrated by said driver while containing said process material.

Preferably said driver is positioned when in use on a top surface of said single flow tube.

Preferably a dynamic balancer means coupled to said massive base proximate said nodes to reduce the vibration of said nodes.

Preferably said dynamic balancer means is an active dynamic balancer controlled by the exchange of signals with said meter electronics.

Preferably said first and second flow tubes have an irregular shape.

Preferably the mass of said massive base is at least 100 times the mass of said flow tube with material flow.

Preferably the mass of said massive base is at least 1000 times the mass of said single flow tube with material flow.

Preferably said driver vibrates said flow tube at a resonant frequency of said material filled flow tube.

Preferably said driver vibrates said flow tube at a non resonant frequency of said material filled flow tube.

Preferably said Coriolis flowmeter is adapted to extend a flow of corrosive material including nitric acid.

Please replace the paragraph beginning on page 15, line 22 with the following:

FIG. 1 is a perspective view of a first possible exemplary embodiment of the invention and discloses a flowmeter 100 having a flow tube 102 inserted through legs 117, 118 of base 101. Flowmeter 200 has a base 101, sidewalls 119 and 120, a front surface 116 and top wall surfaces 117 and 118. Pickoffs LP0 and RP0 and driver D are coupled to flow tube 102. Flowmeter 100 receives a process material flow from supply tube 104 and extends the flow through connector 108 to flow tube 102. Flow tube 102 is vibrated at its resonant frequency with material flow by driver D. The resulting Coriolis deflections are detected by pickoffs LP0 and RP0 which apply signals over conductors 112 and 114 to meter electronics 121. Meter electronics 121 receives the pickoff signals, determines the phase difference between them, determines the frequency of oscillation and applies output information pertaining to the material flow over output path 122 to a utilization circuit not shown. The material flow passes from flow tube 102 and through tube 106 which redirects the material flow through return tube 103 through connector 107 to exit tube 105 which delivers the material flow to a user application. This user application may be a semiconductor processing facility. The process material may be a semiconductor slurry which is applied to the surface of a semiconductor wafer to form a flat surface. The PFA material used in the flow tubes shown on FIG. 1 ensures that the process material is free of impurities such as ions which could be transferred from the walls of metals or glass flow tubes. Locking holes 130 receive set screws 411 to fixably connect element 111 to base 101 as shown on FIG. 4.

Please replace the paragraph beginning on page ~~15~~ 16, line 21 with the following:

Connectors 107, 108, 109 and 110 connect tubes 104, 105 and intermediate tube 106 to the ends of flow tube 102 and return tube 103. These connectors are shown in detail in FIG. 4. The connectors have a fixed portion 111 that includes threads 124. The movable portion of connectors 107 through 110 are threaded onto male threads 124 to connect their respective tubes to the fixed body of the connector of which the fixed portion 111 is a part. These connectors function in a manner similar

to the well known copper tubing flared connectors to connect tubes 104, 105 and 106 to ends of flow tube 102 and return tube 103. Details regarding the connectors are further shown in FIG. 4. RTD is a temperature sensor that detects the temperature of return tube 103 and transmits signals representing the detected temperature over path 125 to meter electronics.

Please replace the paragraph beginning on page 17, line 2 with the following:

In FIG. 2 is a top view of flowmeter 100 of FIG. 1. Pickoffs LP0 and RP0 and driver D each include a coil C. Each of these elements further includes a magnet which is affixed to the bottom portion of flow tube 102 as shown in FIG. 3. Each of these elements further includes a base, such as 143 for driver D, as well as a thin strip of material, such as 133 for driver D. The thin strip of material may comprise a printed wiring board to which coil C and its winding terminals are affixed. Pickoffs LP0 and RP0 also have a corresponding base element and a thin strip fixed to the top of the base element. This arrangement facilitates the mounting of a driver or a pickoff to be accomplished by the steps of gluing a magnet M to the underside of PFA flow tube, gluing the coil C to a printed wiring board 133 (for driver D), positioning the opening in coil C around the magnet M, moving the coil C upwardly so that the magnet M fully enters the opening in coil C, then positioning base element 143 underneath the printed wiring board 133 and gluing or bolting these elements together so that the bottom of base 143 is affixed by glue to the surface of the massive base 101.

Please replace the paragraph beginning on page 24, line 24 with the following:

Figure 16 discloses an alternative embodiment 1600 that is similar to the embodiment of FIG. 14. It has a base 1601, front surface 1616, side walls 1644 and 1641 and front wall surfaces 1644. The differences are that upwardly extending inner mounting posts 1617 and 1618 replace walls 1417 and 1418 of FIG. 14. Also upwardly extending outer mounting posts 1643 and 1645 replace walls 1443 and 1445 of FIG. 14. Outer posts 1643 and 1645 prevent flow tube 1602 from pivoting about post 1617 and 1618 as an axis. Connectors 1608 and 1609 are optional and if desired flow tube 1602 may extend outwardly through posts 1643 and 1645 and replace inlet tube 1604 and outlet tube 1402. The extended flow tube may be